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Spiders of the Families Clubionidae, Gnaphosidae and Thomisidae from the Noto Peninsula and the Southern Part of Ishikawa Prefecture, Japan

By

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ワシグモ科ならびにカニグモ科のクモ類

In the course of the Natural History Researches of the Hokuriku and San-in Districts of Japan made by the National Science Museum, Tokyo (1984–1985), I took charge of the study of spiders inhabiting on and among various plants. I made a research trip to the Noto Peninsula and the southern part of Ishikawa Prefecture in the Hokuriku District from the end of May to the beginning of June in 1985. Collecting sites were selected from the lower altitudinal areas limited to 900 m above the sea level, excluding coastal and insular areas. More than 1,000 individuals of spiders of various families were collected from trees, shrubs and low herbs by sweeping and beating methods as well as by hand sorting. Of these, the spiders of three families, Clubionidae, Gnaphosidae and Thomisidae, have been systematically investigated, and the results will be reported in this short paper.

The field works of the research were performed with the aid of Dr. Shun-Ichi UÉNO, National Science Museum, Tokyo, and Professor Yoshiaki NISHIKAWA, Ohtemon Gakuin University, Osaka. Dr. UÉNO also read through the manuscript of this paper. Messrs. Hiroshi TOKUMOTO, Ishikawa Prefectural Kanazawa Chuo High School, and Eiichi SHINKAI, Tokyo, kindly gave me useful advice for the present study. Before going further, I wish to express my sincere thanks to the above colleagues and friends.

Results of the Research

The present material consists of 291 individuals of the spiders of Clubionidae, Gnaphosidae and Thomisidae. Excepting the immatures not satisfactorily determined, the specimens have been classified into 23 species. Of these, two species of *Clubiona* and one *Zelotes* seem to be new to science but are left undescribed for shortage of the available material.

On the spiders of the three families from the present research areas, the following reports have been published up to the present: OHNO & YAGINUMA, 1971; TOKUMOTO, 1978; ONO, 1986b. These records and the result of the present study have brought 37 nominal

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species of the families to light in this areas. They are as follows:

Clubionidae: *Chiracanthium eutittha*, *Ch. japonicum* (Z, 1♀1♂), *Ch. lascivum* (C, G, N, Q, many), *Ch. unicum*, *Clubiona corrugata*, *Cl. japonicola*, *Cl. jucunda*, *Cl. lena*, *Cl. uenoi* sp. nov.* (G, J, K, N, Q, Y, many), *Cl. vigil*, *Cl. zilla* (J, 2♀♀3♂♂), *Cl. sp. (a)* (B, 1♂), *Cl. sp. (b)* (W, 1♂), *Orthobula crucifera*, *Trachelas japonicus*; Gnaphosidae: *Drassodes serratidens*, *Gnaphosa kompirensis*, *Callilepis schuszeri** (B, 1♀), *Kishidaia albimaculata* (Y, 1♂; Z, 1♀), *Poecilochroa hosiziro*, *Drassyllus* sp. (L, 1♀); Thomisidae: *Oxytate striatipes* (B, D, E, L, N, Q, W, X, Y, Z, many), *Tmarus piger* (B, J, N, P, Q, Y, many), *T. hanrasanensis** (W, 1♂), *T. rimosus** (K, Z, 1 juv. each), *Pistius undulatus* (Y, 1♂), *Misumenops japonicus* (C, D, F, G, J, K, L, P, Q, T, U, V, X, Y, Z, many), *M. tricuspidatus* (C, F, J, N, U, W, X, Y, many), *Heriaeus mellottei*, *Synaema globosum* (Q, 3♂♂; W, 1♀1♂), *S. chikunii** (W, X, Y, Z, many), *Lysiteles coronatus* (Y, 1♀; Z, 1♀), *Bassaniana decorata*, *Coriarachne fulvipes*, *Xysticus croceus* (J, Q, V, X, many), *X. bifidus*, *X. ephippiatus** (S, W, Z, many), *X. insulicola* (C, 5♀♀; Q, 1♂), *X. kurilensis** (B, G, I, J, L, Q, Z, many), *X. saganus*. (Collecting sites with alphabetical codes are plotted in Fig. 1; species with asterisks are newly recorded for the fauna of this area.)

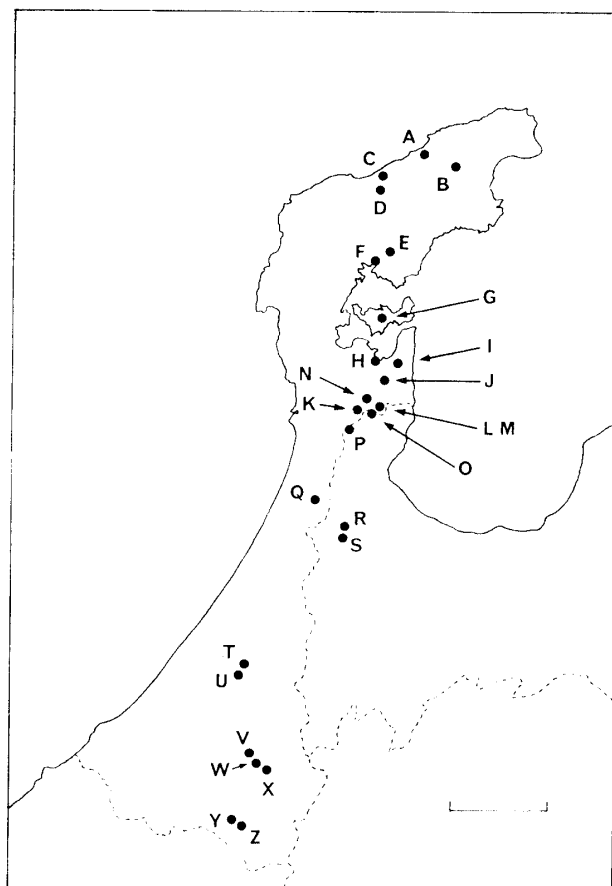


Fig. 1. Collecting sites of the research. — A: Nishitokikuni, B: Mt. Horyūzan, C: Ichijō, D: Mt. Hachibuseyama, E: Takauchibatake, F: Pira, G: Mt. Yomura-zukayama, H: Nanao-shi, I: Sano-machi, J: Jōyama, K: Fudōnotaki Fall, L: Mt. Sekidōzan, M: Mt. Sekidōzan (an abandoned mine), N: Ninomiyagawa Valley, O: Mt. Masugatayama, P: Mt. Goishigamine, Q: Mt. Hōdatsusan, R: Mt. Inabayama, S: Miyanaka, T: Mt. Kuragatake, U: Tsurugi-machi, V: Senamigawa, W: Chūgū, X: Ichirino, Y: Byākodan Valley, Z: Mt. Sunagozenyama. (Upper line of the frame, 37°45'N, bottom, 36°N, left, 136°E, right, 137°30'E; scale: 20 km.)

Discussion

From an analysis of the data given in the preceding chapter, it can be safely concluded

that, so far as concerned with the three families, the area has basically a typical fauna common to the lower altitudinal regions of Honshu with the climate between the cold and the warm temperate zones. The spider fauna is inconspicuous and lacking the subtropical and the alpine species, and includes no species with restricted distributional ranges.

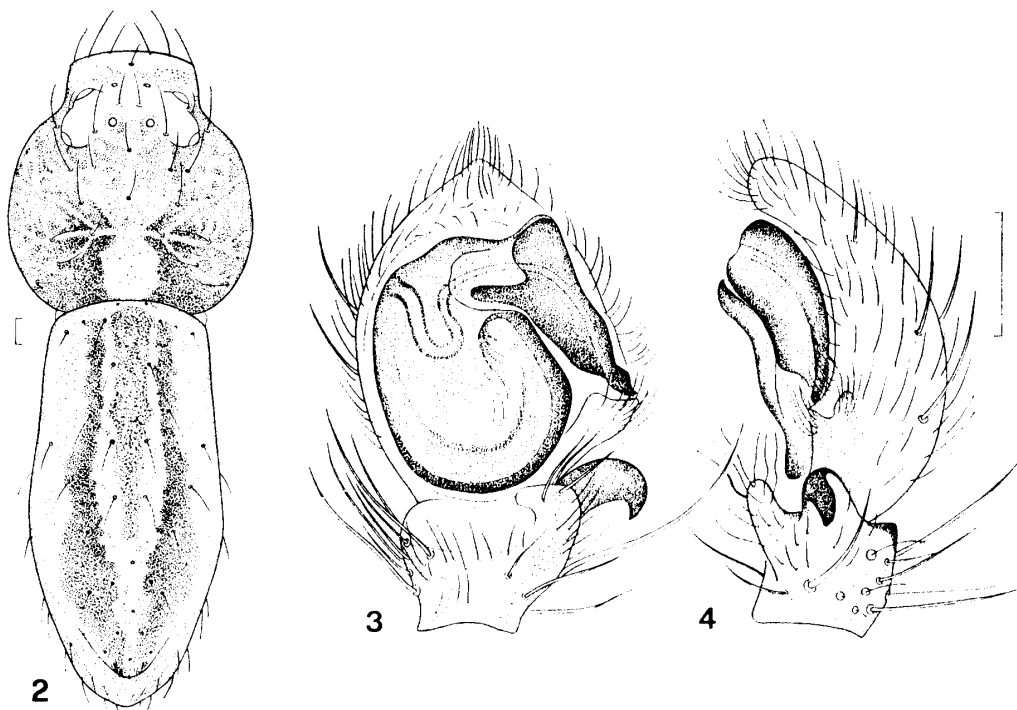
Contrary to little zoogeographical significance, some noticeable observations in systematics have been made through the identification of the specimens. Notes on two interesting thomisid spiders and a description of a new *Clubiona* will be given in the following lines.

***Tmarus hanrasanensis* PAIK, 1973**

(Figs. 2-4)

Tmarus hanrasanensis PAIK, 1973, Theses Coll. Grad. School Educ. Kyungpook Natn. Univ., 4, p. 82.
— ONO, 1977, Acta Arachnol., 27 (spec. no.), p. 70. — ZHU & WEN, 1981, J. Bethune Med. Univ., 7(4), p. 24.

This species was described by PAIK (1973) from a single female collected in Jejoo Island of Korea. Since then, it has been recorded only twice: 1♀ from Akita Pref., Tohoku, Japan, and also 1♀ from Jilin, NE China (ONO, 1977; ZHU & WEN, 1981). The male has hitherto been unknown. In the present material, one male *Tmarus* mixed with the common species, *T. piger*, is considered with high probability to be conspecific with *T. hanrasanensis*, after a comparison with all the known Japanese species of the genus. The male is closely similar to that of *T. piger*, but is distinguishable from the latter by the shape of the male palp. The



Figs. 2-4. *Tmarus hanrasanensis* PAIK, 1973. — 2. Pro- and opisthosoma of male, dorsal view.
3. Male palp, ventral view. 4. Ditto, retrolateral view. (Scale: 0.25 mm.)

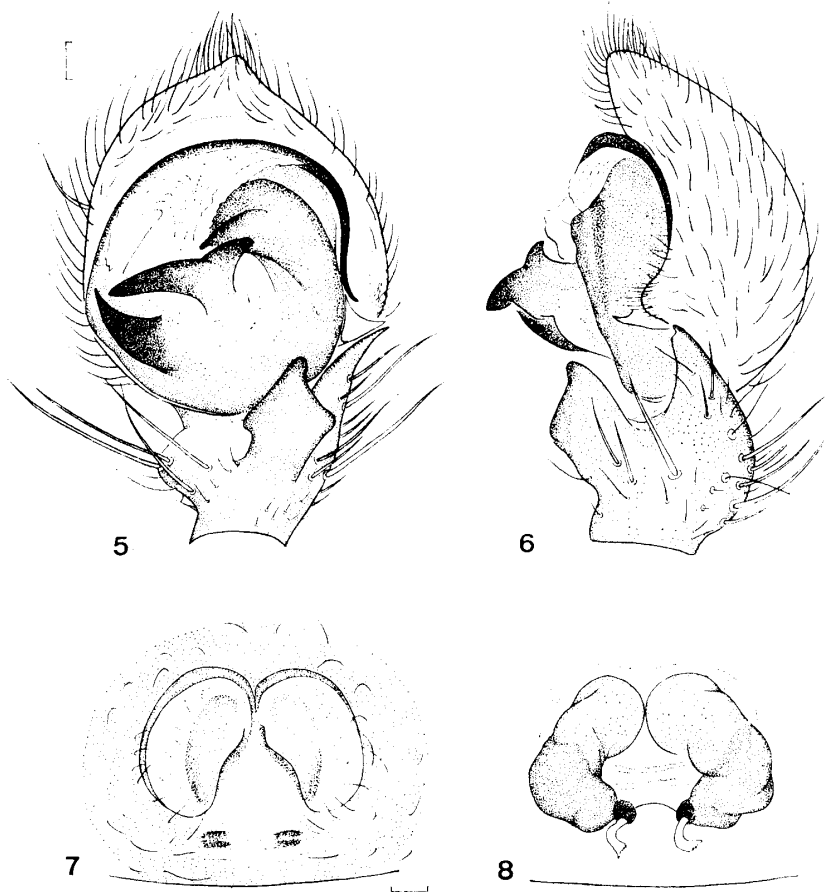
embolus of *T. hanrasanensis* is expanded and larger than that of *T. piger* (Fig. 3).

***Xysticus kurilensis* STRAND, 1907**

(Figs. 5–8)

Xysticus kurilensis STRAND, 1907, Abh. Naturf. Ges. Görlitz, 25, p. 209.

Xysticus kurilensis has never been recognized since it was originally described by STRAND (1907) from Etorofu Island of the Kuriles, but is actually widespread in Japan, from Hokkaido to Kyushu. Some specimens of this species are also included in the present material. The male palp and female genitalia of the individuals collected on Mt. Sekidôzan are illustrated (Figs. 5–8). This spider is commonly found under leaf litter as well as on low herbs in forests.



Figs. 5–8. *Xysticus kurilensis* STRAND, 1907, from Mt. Sekidôzan. — 5. Male palp, ventral view. 6. Ditto, retrolateral view. 7. Epigynum. 8. Female genitalia, dorsal view. (Scale: 0.1 mm.)

***Clubiona uenoi* sp. nov.**

(Figs. 9–14)

Measurement. Body length ♀ 8.41 mm, ♂ 5.63–7.41 mm; prosoma length ♀ 3.26 mm,

♂ 2.67–3.55 mm, width ♀ 2.37 mm, ♂ 1.78–2.44 mm; opisthosoma length ♀ 5.19 mm, ♂ 2.96–4.04 mm, width ♀ 3.11 mm, ♂ 1.48–1.85 mm. Lengths of legs of the holotype and allotype (in mm; ♀/♂):

Leg	Tarsus	Metatarsus	Tibia	Patella	Femur	Total
I	0.89/1.11	1.48/2.18	2.00/2.96	1.26/1.48	2.26/2.96	7.89/10.69
II	0.85/1.07	1.48/2.22	2.07/2.96	1.26/1.48	2.37/3.04	8.03/10.77
III	0.63/0.70	1.78/2.30	1.00/1.85	0.96/1.18	1.96/2.44	6.33/ 8.47
IV	0.78/0.85	2.96/3.48	2.26/2.59	1.15/1.41	2.81/3.11	9.96/11.44

Prosoma covered with short hairs and weak setae, length/width ♀ 1.38, ♂ 1.40–1.50; AME*, PME and PLE similar in size, ALE slightly larger than the others, ALE/AME ♀ 1.27, ♂ 1.20–1.40, PLE/PME ♀ 1.00, ♂ 1.00–1.17, AME-AME/AME-ALE ♀ 0.79, ♂ 0.75–0.92, PME-PME/PME-PLE ♀ 1.43, ♂ 1.40–1.62, MOA wider than long (length/width ♀ 0.61, ♂ 0.61–0.68), wider behind than in front (anterior width/posterior width ♀ 0.61, ♂ 0.62–0.65), clypeus narrow, clypeus/AME-AME ♀ 0.45, ♂ 0.37–0.58. Promargin of cheliceral fang furrow with three teeth, the middle one larger, retromargin with two teeth (Fig. 9); labium length/width ♀ 1.43, ♂ 1.26–1.48; sternum length/width ♀ 1.50, ♂ 1.37–1.53. Leg formula IV–II–I–III.

Spiniformation of legs. ♀ (holotype): Femur: I–III dorsal 1–1–1, IV dorsal 1–0–1–1, I, II, IV prolateral and IV retrolateral 0–0–1, III pro- and retrolateral 0–1–1; patella: III–IV retrolateral 1; tibia: I–II ventral 2–2–0, III pro- and retrolateral 1–0–1, ventral 1–1–1 ap, IV pro- and retrolateral 1–1, ventral 1–1–1 ap; metatarsus: I–II ventral 2–0–0, III–IV dorsal 1, prolateral 1–1–2 ap, III retrolateral 1–0–2 ap, ventral 2–0–2 ap, IV retrolateral 1–1–2 ap, ventral 2–1–2 ap.

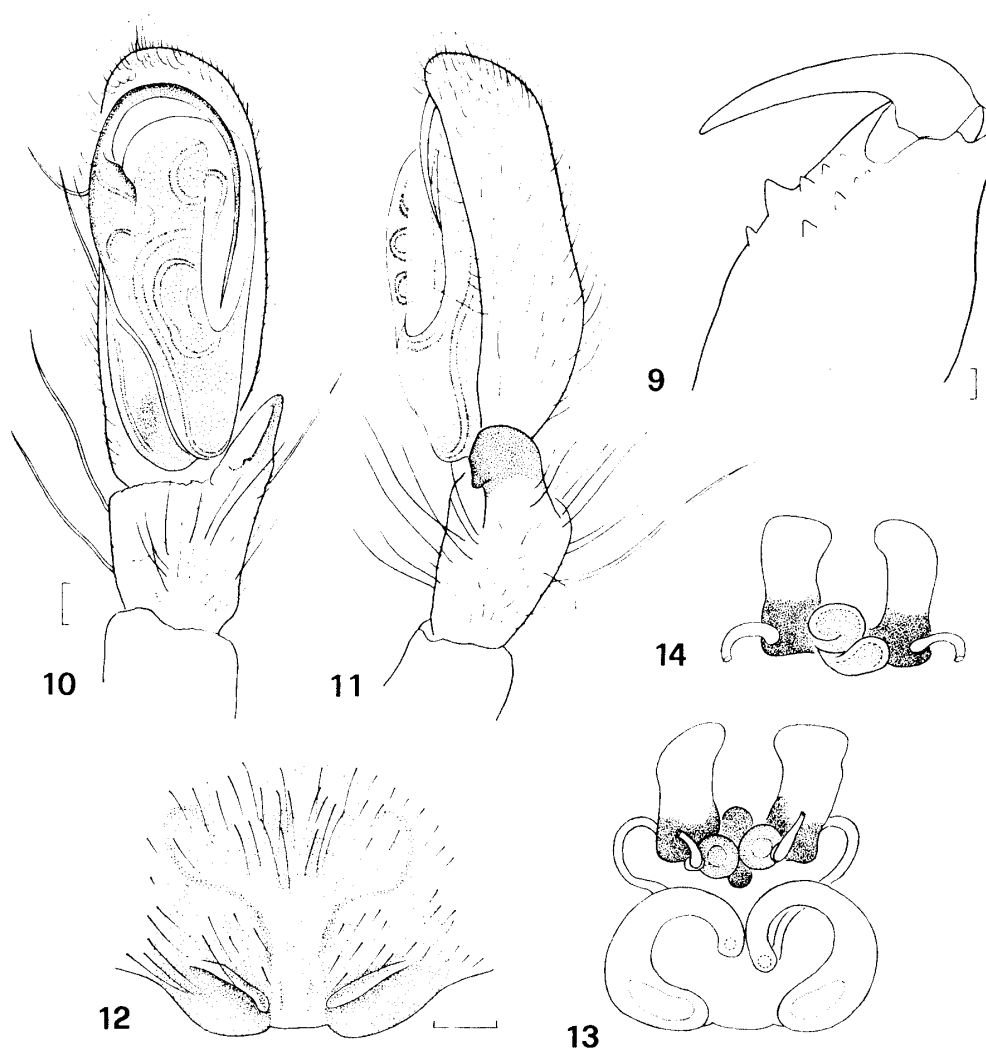
♂ (allotype): Femur: I–IV dorsal 1–1–1, I prolateral, IV pro- and retrolateral each 0–0–1, I retrolateral, II–III pro- and retrolateral each 0–1–1; patella: III–IV retrolateral 1; tibia: I–II ventral 2–2–0, III–IV pro- and retrolateral 1–0–1, III ventral 1–1–0, IV ventral 1–1–1 ap; metatarsus: I–II ventral 2–0–0, III–IV dorsal 1, III prolateral, IV pro- and retrolateral, ventral each 1–1–2 ap, III retrolateral 1–0–2 ap, ventral 2–0–2 ap.

Male palp (Figs. 10–11). Tibia with a retrolateral apophysis sclerotized and spoon-shaped; ventral margin of the apophysis with a small tooth. Tarsus long and slender; tegulum without developed apophysis; embolus long, acicular, on membranous conductor, extending in proximal direction.

Opisthosoma ovate, longer than wide (length/width ♀ 1.67, ♂ 1.99–2.19), with weak hairs.

Female genitalia (Figs. 12–14). Epigynum covered with long hairs; intro-mittent orifices slit-like, situated on posterior margin of sclerotized plate. Intromittent canals curved, touching each other at mid-line, distally thinner; atrium long, larger than spermatheca; spermatheca globular and as large as gland.

* The abbreviations used in this description are the same as those explained in a preceding paper of mine (ONO, 1986a).



Figs. 9–14. *Clubiona uenoi* sp. nov. — 9. Left chelicera, ventral view. 10. Male palp, ventral view. 11. Ditto, retrolateral view. 12. Epigynum. 13. Female genitalia, dorsal view. 14. Anterior part of female genitalia, ventral view. (Scale: 0.1 mm.)

Coloration and markings. ♀: Prosoma yellowish brown; chelicerae, maxillae and labium reddish brown; sternum light yellowish brown; palps and legs light yellowish brown. Opisthosoma light rose, without any marking.

♂: Prosoma yellow to yellowish brown; chelicerae light yellowish brown, brown or reddish brown; maxillae and labium light yellowish brown; sternum lemon yellow or yellowish white; palps and legs yellowish white. Opisthosoma yellow, light yellowish brown or rose.

Range. At present, known only from the Hokuriku District, Japan.

Type series. Holotype: ♀, Mt. Aoyagiyama, NW slope, 640–740 m alt., Byâkōdan Valley, Shiramine-mura, Ishikawa-gun, Ishikawa Pref., 4-VI-1985, H. Ono leg. (NSMT-Ar 1203); allotype: ♂, same data as holotype (NSMT-Ar 1204); paratype: 1♂, ibid. (NSMT-Ar 1205).

Other specimens examined. 1♂, G; 1♂, J; 1♂, K; 1♂, N; 3♂♂, Q. All the specimens

are deposited in the collection of the Department of Zoology, National Science Museum (Nat. Hist.), Tokyo.

Remarks. According to the key to the species-groups of the genus *Clubiona* proposed by DONDALE and REDNER (1982), this species falls in the group of *C. trivialis*, which contains many species occurring in Eurasia and North America. *C. uenoi* has a close resemblance in external morphology to the Japanese species, *C. corrugata* BÖSENBERG et STRAND, 1906, but is distinguished from the latter by the shape of epigynum. Male of *C. corrugata* is unknown.

Named after Dr. Shun-Ichi UÉNO, Tokyo.

Summary

After an investigation of the spider specimens obtained by a field research in the Noto Peninsula and the southern part of Ishikawa Prefecture in Japan, 20 nominal species of the families Clubionidae, Gnaphosidae and Thomisidae have been recognized. Of these, *Callilepis schuszeri*, *Tmarus hanrasanensis*, *T. rimosus*, *Synaema chikunii*, *Xysticus ephippiatus* and *X. kurilensis* are newly recorded for the fauna of the areas. It can be said that these areas (up to 900 m alt.) have a typical spider fauna in these families for lower altitudinal regions of Honshu with the climate between the cold and warm temperate zones. Notes are given on two interesting thomisid spiders, *Tmarus hanrasanensis* and *Xysticus kurilensis*. The sexual organs of these spiders have been newly illustrated. A new species, *Clubiona uenoi*, is described on the basis of the material collected by the present research.

要 約

北陸・山陰地域の自然史科学的総合研究の一環として、1985年5月から6月にかけて、能登半島および石川県南部の地域で、葉上性クモ類の採集調査を行なった。採集地点はすべて標高900m以下の平地あるいは低山地であり、島嶼や高山帯は対象外とした。本調査で得られた約1,000個体のクモの標本のうち、フクログモ、ワシグモおよびカニグモ類の標本291個体を分類学的に研究した結果、フタホシテオノグモ *Callilepis schuszeri*、ハナナガトラフカニグモ *Tmarus hanrasanensis*、セマルトラフカニグモ *T. rimosus*、チクニエビスグモ *Synaema chikunii*、シナカニグモ *Xysticus ephippiatus* ならびにチシマカニグモ *X. kurilensis* の6種を同地域から初めて記録した。このうちとくに興味深いハナナガトラフカニグモとチシマカニグモについては若干の注釈を加え、生殖器を図示した。また一新種ウエノフクログモ *Clubiona uenoi* を記載した。

以上の記録に先人の業績を整理して加えると、同地域からフクログモ科13種、ワシグモ科5種、カニグモ科19種が知られることになる。しかし、少なくともこの3科に関するかぎり、同地域は本州中南部の低山地にみられる典型的なクモ相を呈し、地域の特異性や地史との関連は見出せない。同地域のクモ相は北海道低地から九州まで広く分布するクモを中心に成り立っていて、亜熱帯や寒帯、高山性の分子を欠いている。

一般に葉上性のクモは広域分布を示すものが多く、その生息域はおもに気温や生物的環境に影響されるが、本調査地点の緯度的および高度的条件を考慮すれば、以上の内容はむしろ当然の結果というべきかも知れない。

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For the literature on regional faunal studies by TOKUMOTO and TOGASHI, see TOKUMOTO (1978, p. 155).

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